

STUDIES OF THE AMERICAN FALCONIDÆ.—MONOGRAPH OF THE
GENUS MICRASTUR.

BY ROBERT RIDGWAY.

Introduction.

No group of American hawks has presented more numerous difficulties in the way of elucidating and strongly characterizing its species; and so complex are the obstacles presented in this case, that the conclusions of authors, who have made the genus *Micrastur* a subject of special study, are very conflicting. The brevity and otherwise unsatisfactory nature of the original descriptions of the older species is the main difficulty, but the perplexing stages of plumage, which in this genus are very remarkable, and so far as we know entirely peculiar among the *Falconidæ*, add still more to the confusion into which their synonymy has fallen. In the latter we have reference to the fact, perhaps not yet generally known, that two distinct phases of color, a gray and a rufescent, occur in some of the species at all stages of growth, which circumstance has but very recently been taken into consideration in defining the specific characters.

The undertaking of this monograph would have been impossible to the author but for the kind assistance of Mr. Osbert Salvin, the eminent English ornithologist, who transmitted for examination his entire series of specimens, representing every known species of the genus.

NATIONAL MUSEUM, WASHINGTON, D. C., July 30, 1875.

Literature.

The first species of this genus was described by Vieillot in 1817, and since that time numerous other names have been proposed, which are as follows, in chronological order:¹—

- (1) *Sparvius ruficollis*, Vieillot, *Nouv. Dict. Hist. Nat.* X, 1817, p. 322.
(= *M. ruficollis*, adult, rufous phase.)
- (2) *Sparvius gilvicollis*, Vieill., *l. c.* p. 323. (= *M. ruficollis*, gray phase, adult?)
- (3) *Sparvius melanoleucus*, Vieill., *l. c.* p. 327. (= *M. melanoleucus*, ad.)

¹ The names following in parentheses are those adopted in this work.

- (4) *Falco leucauchen*, Temm., Pl. Col. pl. 36, 1823. (= *M. ruficollis*, rufous phase, *juv.*?)
- (5) *Falco leucomelas*, Licht., Verz. Doubl 1823. p. 62. (= *M. melanoleucus*.)
- (6) *Falco xanthothorax*, Temm., Pl. Col. pl. 92, 1824. (= *M. ruficollis*, rufous phase, adult.)
- (7) *Falco brachypterus*, Temm., l. c. pls. 116 (*juv.*), et 141 (adult). (= *M. melanoleucus*.)
- (8) *Nisus concentricus*, Less., Traité d'Orn. 1831, p. 60. (= *M. concentricus*???)
- (9) *Carnifex naso*, Less., L'Echo du Monde Savant, année 9, p. 1081. (= *M. melanoleucus*.)
- (10) *Falco percontator*, Cabot, Boston Journ. IV, 1844, 462. (= *M. melanoleucus*, adult.)
- (11) *Micrastur guerilla*, Cassin, Pr. Ac. Nat. Sci. Phila., 1848, 87. (= *M. guerilla*, young.)
- (12) *Astur mirandollei*, Schleg., Ned. Tijdschr. I, 1863, p. 130. (= *M. mirandollii*.)
- (13) *Micrastur macrorhynchus*, Pelz., Orn. Nov. 1865, p. 11. (= *M. mirandollii*.)
- (14) *Climacocercus zonothorax*, Cabanis, Journ. für Orn., 1865, p. 406. (= *M. zonothorax*.)

Besides the above, authors generally quote *Sparvius semitorquatus*, Vieillot (Nouv. Dict., x. 1817, p. 322), for *M. melanoleucus*, but we cannot identify it with that species (see p. 484); and Pelzeln quotes a manuscript or museum name of Natterer's, as follows:—

Falco trifasciatus, Natt., Catal. Msc. No. 954. (= *M. gilvicollis*, Pelz., = *M. ruficollis*, adult, plumbeous phase.)

The more important special discussions bearing upon the species of this genus are the following:—

PELZELN, AUGUST VON.—Reise der Oesterreichischen Fregatte Novara, um die Erde in den Jahren 1857, 1858, 1859, unter den Befehlen Commodore B. von Wüllerstorff-Urbair, Zoologischer Theil. Erster Band. Vögel. Wein, 1865, pp. 176, quarto, pls. 6.

The genus *Micrastur* is treated at considerable length on pp. 9–12. The following species are recognized on p. 12:—

<i>M. brachypterus</i> (Temm.)	<i>M. guerilla</i> Cassin.
<i>macrorhynchus</i> (Natterer.)	<i>concentricus</i> (Illig.)
<i>xanthothorax</i> (Temm.)	<i>gilvicollis</i> (Vieill.)

Of the above *M. macrorhynchus* = *M. mirandollii*, Schleg. The following references are assigned to the other two species which are noticed in detail:—

M. concentricus (p. 8.)

Falco concentricus, Illig. in Mus. Berol.

Nisus concentricus, Less. Tr. 60.—D'Orb., Voy. 88.—Schleg. Mus. P.-B., Astures, 51.

Climacocercus concentricus, Caban. in Erichson's Archiv. I, 1844, 265; in Tschudi, F. P. 18, 98; in Schomb. Guiana, III. 735.—Burm. Th. Bras. II, 86.

Circæetus (Herpetotheres) concentricus, Kaup, Isis, 1847, 260; in Troschel's Archiv. I, 1850, 37.

Micrastur concentricus, Gray, Gen. 28 (Excl. Syn. Vieill.).—Bonap. Comp. 30 (Excl. Syn. Vieill.); Rev. Zool. 1854, 537.—Strickl. Orn. Syn. I, 1855, 123 (part.)

Hab. Guiana (Mus. Berol.), Cayenne (Mus. Vindob.), Bahia, Para (Mus. Berol.), Marabitanas, Barra do Rio Negro, Para (Natterer), prope Rio de Janeiro (Zeilebor), Bolivia (D'Orbigny), Mexico (Bonap.).

M. gilvicollis (p. 10.)

Sparvius gilvicollis, Vieill., N. D. X, 323; Enc. Meth. 1264.

Falco trifasciatus, Natterer, Catal. Msc., No. 954.

Climacocercus concentricus, juv. Caban., in Tschudi, F. P. 99.

Falco concentricus, Pucheran, R. Z. 1850, 91.

Hab. Cayenne (Mus. Vindob.), Brazil, Mattogrosso, S. Gabriel, Borba (Natterer), Peru (Cabanis).

M. macrorhynchus (p. 11.)

Falco macrorhynchus, Natt. Cat. Msc., No. 920.

Hab. Brazil, Barra do Rio Negro, S. Maria de Brancho, Para (Natt.).

Remarks.—The *M. concentricus* of Pelzeln, l. c. = *M. concentricus*, Ridgw., Pr. Boston Soc., N. H., May, 1873, p. 81.

In this important notice Herr von Pelzeln discusses at length, the points of distinction between his *M. concentricus* (= *M. concentricus*, LESS.???) and *M. gilvicollis* (Vieill.), successfully establishing their distinctness.

SCLATER, P. L., M.A., Ph.D., F.R.S., and SALVIN, OSBERT, M.A., F.L.S. Notes on the species of the genus *Micrastur*. <Proc. Zool. Soc. London, May 27, 1869, 364-369.

The seven species recognized are diagnosed as follows (p. 365):—

- A. Majores : subtus albi fere unicolors.
- a.* major, supra nigricans. 1. *M. semitorquatus.*
 b. minor, supra cinereus. 2. *M. mirandollii.*
- B. Minores : sup. subtus albi, dense transfasciati.
- a.* dorso rufo, pileo cinereo.
- a''.* minor ; dorso dilutiore rufo. 3. *M. ruficollis.*
 b''. major ; dorso saturatiore rufo. 4. *M. zonothorax.*
- b.* dorso cinereo : pileo concolore.
- a'''.* ventre imo et crisso albis immaculatis. 5. *M. gilvicollis.*
 b'''. ventre imo et crisso cinereo transfasciatis :
- a''''.* dorso dilutiore cinereo. 6. *M. leucauchen.*
 b''''. dorso saturatiore cinereo. 7. *M. guerilla.*

The synonyms assigned the several species are as follows:—

1. *M. SEMITORQUATUS* (p. 365).
Sparvius semitorquatus, Vieill.
Sparvius melanoleucus, Vieill.
Falco brachypterus, Temm.
Falco leucomelas, Licht.
Carnifex naso, Lesson.
Falco percontator, Cabot.
2. *MICRASTUR MIRANDOLLI* (p. 365).
Astur mirandollii, Schleg.
Micrastur macrorhynchus, Pelz (1865).
3. *MICRASTUR RUFICOLLIS* (p. 366).
Sparvius ruficollis, Vieill.
Falco xanthothorax, Temm.
4. *MICRASTUR ZONOTHORAX* (p. 366).
Climacocercus zonothorax, Cabanis (1865).
5. *MICRASTUR LEUCAUCHEN* (p. 367).
Falco leucauchen, Temm.
Micrastur gilvicollis, (adult) Pelzeln, Orn. Nov. 1865, 10.
6. *MICRASTUR GUERILLA* (p. 367).
Micrastur guerilla, Cass (1848).
Micrastur concentricus, Scl. P. Z. S. 1856, 285.
Micrastur gilvicollis, SCL. & SALV. Ibis, 1859, 218 ; SCL. P. Z. S. 1858, 96 ;
1860, 96. LAW. R., Ann. Lyc. N. Y. vii. 317.
Micrastur xanthothorax, SCL. P. Z. S. 1857, 368.
7. *MICRASTUR GILVICOLLIS* (p. 368).
Sparvius gilvicollis, VIEILL., *Micrastur gilvicollis*, jr. PELZ. Orn. Nov.
1865, 10.
Nisus concentricus, LESSON (1831).

Not agreeing with Herr Pelzeln's conclusions concerning *M. concentricus* (LESS.), and *M. gilvicollis* (VIEILL.), Messrs. Sclater and Salvin give to the former the name *M. gilvicollis* (Vieill.), and to the latter that of *M. leucauchen* (Temm.), a view of the matter in which we cannot concur, for reasons stated under the head of these species, respectively.

RIDGWAY, ROBERT. Revision of the Falconine Genera, *Micrastur*, *Geranospiza* and *Rupornis*, and the Strigine Genus *Glaucidium*. Based upon specimens in the Museum of the Smithsonian Institution, the Academy of Natural Sciences of Philadelphia, the American Museum, at New York, the Boston Society of Natural History, the Museum of Comparative Zoology at Cambridge, and the Ornithological Cabinet of Mr. Geo. N. Lawrence. <Proc. Bost. Soc. Nat. Hist., May 21, 1873, pp. 73-106.

The relationship of this genus to *Herpetotheres* and the *Falcones* in osteological structure is here first pointed out, as well as a striking analogy to the *Strigidæ* in the facial ruff, downy edge to inner webs of the primaries, and dimorphic plumage of some species.

Five species are recognized by the following diagnoses:—

A.—Inner toe appreciably shorter than the outer.

a. Wing, 9.00 or more.

1. Black above, with a nuchal collar. Tail longer than the wing.

M. semitorquatus.

2. Plumbeous above, without a nuchal collar. Tail shorter than the wing.

M. mirandollei.

b. Wing less than 8.00.

3. Throat and adjoining portions ashy in the adult. No nuchal collar.

M. ruficollis.

4. Throat and crescent behind the jaw white, sharply defined; a nuchal collar of white spots.

M. leucauchen.

—Inner toe appreciably longer than the outer.

5. Wing less than 8.00. Tail shorter than the wing. Lower tail-coverts immaculate white.

M. concentricus.

The references are as follows (omitting *M. semitorquatus* and *M. mirandollei*, which are not different from those given by Sclater and Salvin):—

3. MICRASTUR RUFICOLLIS. (P. 78.)

Sparvius ruficollis, Vieill. (Rufous phase.)

Micrastur gilvicollis, Pelz. Orn., Nov. 1865, 10. (Grayish phase.)

Fulco xanthothorax, Temm. (Rufous phase.)

Falco trifasciatus, Natterer. (fide Pelzeln.)

Climacocercus concentricus, juv. Cabanis, in Tschudi Fauna Peruana, 99.

Micrastur guerilla, Cass.

Climacocercus zonothorax, Cabanis.

Micrastur leucauchen, Sel. and Salv., P. Z. S., 1869, 367.

4. MICRASTUR LEUCAUCHEN. (P. 80.)

Falco leucauchen, Temm.

5. MICRASTUR CONCENTRICUS. (P. 81.)

Falco concentricus, Illig.—*Nisus concentricus*, Lesson.—*Climacocercus concentricus*, Caban. in Tschudi Fauna Peruana, 18 and 98.—*Micrastur concentricus*, Pelz. Orn., Nov. 1865, 9.

Falco senex, Natterer in Mus. Vindob. (fide Pelzeln.)

Micrastur gilvicollis, Sel. & Salv., P. Z. S., 1869, 368.

SHARPE, R. BOWDLER.—Catalogue of the Accipitres, or the Diurnal Birds of Prey in the collection of the British Museum. London, June, 1874, 8vo. pp. i.-xiii., 1-479, pls. xiv. Genus "17 *Micrastur*," pp. 74-80. The following "Key to the Species" is given.

a. Larger: underneath entirely uniform, not barred.

a'. With a white or creamy buff collar round hind neck.

semitorquatus, p. 75.

b'. With no collar.

mirandollei, p. 76.

b. Smaller: underneath barred in a most regular manner.

c'. Flanks white, barred with grayish-black.

c''. Above uniform slate color, brown, or blackish-gray.

c'''. Foreneck more or less tinged with orange-rufous.

ruficollis, ♂, p. 76.

d'''. Foreneck barred with white and black.

c'''''. Lower abdomen and vent white. *gilvicollis*, ♂ ♀, p. 78.

d'''''. Lower abdomen and vent distinctly barred like the rest of under surface.

guerilla, ♂, p. 79.

d''. Back rufous or rufous-brown; head ashy-gray or grayish-black, in evident contrast.

e'''. Chest orange-rufous.

ruficollis, ♀, p. 76.

f'''. Chest white, barred with grayish-black.

e'''''. Head and sides of neck ash-gray. *guerilla*, ♀, p. 79.

f'''''. Head and sides of neck grayish-black, the latter slightly washed with rufous.

zonothorax, ♀, p. 79.

d'. Flanks uniform bright chestnut.

castanilius,¹ p. 80.

¹ According to Mr. Salvin (in *Epist.*, May 6, 1875), this bird "turns out to be an African species belonging to the genus *Accipiter* seu *Nisus*. The South American locality given by Verreaux is quite wrong. It is almost identical with *Astur tibialis*, differing only in size."

The chief synonyms and references are as follows:—

3. MICRASTUR RUFICOLLIS. (P. 76.)

Sparvius ruficollis, Vieill.

Falco leucauchen, Temm.

Micrastur leucauchen, ScL. & Salv.

Falco xanthothorax, Temm.

Micrastur gilvicollis (ad.), Pelzeln.

4. MICRASTUR GILVICOLLIS. (P. 78.)

Sparvius gilvicollis, Vieill.

Nisus concentricus, Less.

Micrastur concentricus, Pelz. Orn. Bras.

Micrastur gilvicollis, Pelz. Orn., Nov. ScL. & Salv.

5. MICRASTUR GUERILLA. (P. 79.)

6. MICRASTUR ZONOTHORAX. (P. 79.)

*Concordance of Names applied to the several Species of Micrastur
by Different Authors.*

1875. (Ridgway.)	1874. (Sharpe.)	1873. (Ridgway.)	1869. (ScL. & Salviu.)	1865. (Pelzeln.)
1. <i>Melanoleucus</i> (482)	<i>Semitorquatus</i> (76)	<i>Semitorquatus</i> (75)	<i>Semitorquatus</i> (365)	<i>Brachypterus</i> (12).
2. <i>Mirandollii</i> (485)	<i>Mirandollei</i> (76)	<i>Mirandollei</i> (77)	<i>Mirandolii</i> (365)	<i>Macrohynchus</i> (11).
3. <i>Guerilla</i> (486)	<i>Guerilla</i> (79)	<i>Ruficollis</i> (part)	<i>Guerilla</i> (367)	<i>Guerilla</i> (12).
4. <i>Zonothorax</i> (489)	<i>Zonothorax</i> (79)	<i>Ruficollis</i> (part)	<i>Zonothorax</i> (366)	
5. <i>Ruficollis</i> (490)	<i>Ruficollis</i> (76)	{ <i>Ruficollis</i> (78)	{ <i>Ruficollis</i> (366)	{ <i>Xanthothorax</i> (12).
6. <i>Pelzelni</i> (494)	.....	{ <i>Leucauchen</i> (80)	{ <i>Leucauchen</i> (367)	{ <i>Gilvicollis</i> (part) (10).
7. <i>Concentricus</i> (496)	<i>Gilvicollis</i> (75)	<i>Concentricus</i> (81)	<i>Gilvicollis</i> (part) <i>Gilvicollis</i> (363)	<i>Concentricus</i> (8).

Monograph.

Genus MICRASTUR, Gray.

Brachypterus, Less., Compl. Buff. VII, 1836, 113 (not of Kugel, 1794).

Type *M. melanoleucus*.

Carnifex, Less., Rev. Zool., 1842, 378 (not of Sundevall, 1836). Type *C.*

naso, Less., = *M. melanoleucus*.

Micrastur, Gray, List Gen. B., 1841, 6; Gen. I, 1844, p. 28, pl. 10, fig. 1.

Type *Falco brachypterus*, Temm. = *M. melanoleucus*.

Climacocercus, Cabanis, in Tschudi's Fauna Peruana, Vög. 1845, 98. Type

Sparvius gilvicollis, Vieill.

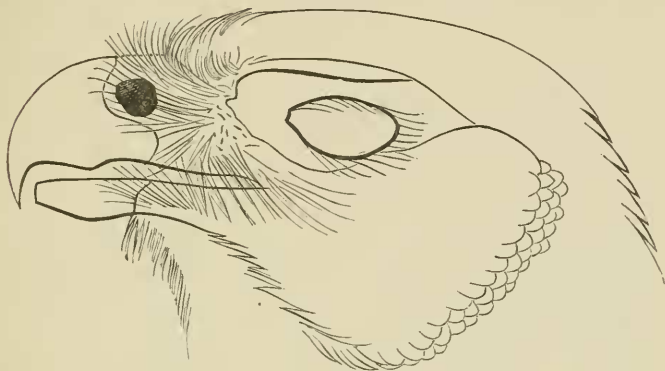
Climacourus, Bonap., 1849 (fide Gray).

Rhyncomegus, Bonap., Rev. et Mag. de Zool., 1854, 537. Type *Falco brachypterus*, Temm.

Notihierax, Sund. Disp. Acc. Hemeroharp, 1872, 25. Type *Falco xanthothorax*, Temm.

GEN. CH.—Form of *Nisus*, *i. e.*, wings short, rounded, and concave beneath, tail very long, tarsi and middle toe long and slender, head small, bill short and compressed, with the upper tomium more or less festooned. A distinct ruff around the face, as in *Circus*; inner webs of the primaries with their edges soft and

Fig. 1.

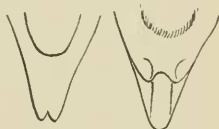
*M. melanoleucus.* Nat. size.

woolly, as in the *Strigidae*. Bill short, high, and much compressed, nearly twice as deep as broad at the base; the culmen

Fig. 2.

*M. ruficollis.* Nat. size.

Fig. 3.



abruptly curved; gongs greatly convex; lower mandible truncated, the terminal outline rounded when viewed laterally, but in front divided by an angular notch (Fig. 3); upper tomium with a more or less prominent festoon. Cere almost covered by fine hair-like bristles, which are strongly recurved on the top. Nostril broadly oval, or nearly circular, against the anterior edge of the cere. Orbital region and superciliary shield perfectly bare, the

Fig. 5.

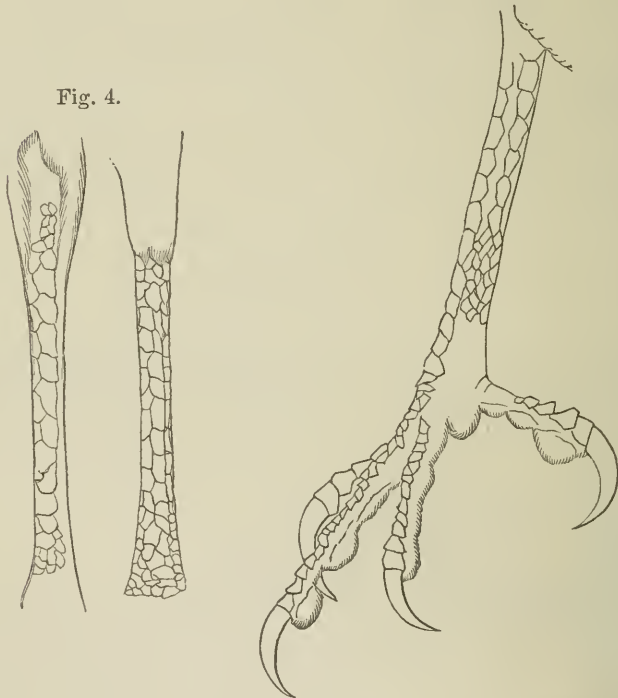


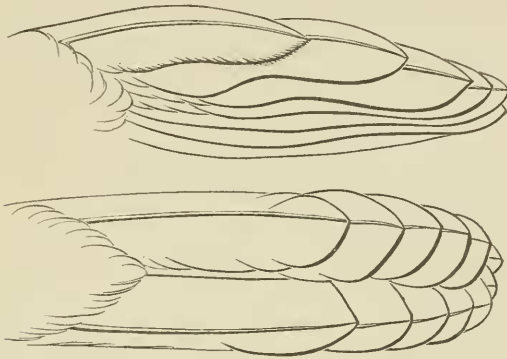
Fig. 4.

M. zonothorax. Nat. size.

latter very prominent and exposed for its whole length, as in *Falco*. Tarsus more than twice as long as the middle toe, scarcely feathered below the knee; its scutellæ of a hexagonal form, and arranged in longitudinal series—larger in front and behind, where they sometimes form a continuous frontal and posterior series of rather quadrate plates. (Figs. 4, 5.) Top of the toes with irregular,

sometimes interrupted, transverse scutellæ to the base. Web between outer and middle toes well developed. Claws of normal form, well curved, and exceedingly sharp. Wing short, much rounded, and very concave beneath, the primaries much bowed (as in *Nisus*); third to sixth quill longest; first shortest; outer

Fig. 6.

*M. ruficollis*. $\frac{1}{2}$ nat. size.

five or six with their inner webs slightly sinuated. Tail very long (nearly equal to or exceeding the wing), much rounded, or graduated. Feathers of the crown and occiput well developed, sometimes¹ large and broad, capable of being erected into a broad, depressed crest.

This well-characterized and very remarkable genus comes nearest *Herpetotheres*, with which it agrees closely in osteological structure as well as in essential features of external form; but it differs in many important points throughout its whole anatomy—more especially in the development of the nasal bones, which are much less completely ossified—almost as little so as in the *Buteoninæ*. It presents analogies with *Circus* and the *Strigidæ* in the facial ruff, and with the latter in the character of the inner webs of the primaries, as well as in the dimorphic plumage of some of the species, and with *Nisus* in general aspect and mode of life. The remarkable

Fig. 7.

*M. ruficollis*.

¹ Notably in the smaller species. (See Fig. 2.)

analogy to the Owls is seen not only in the respects pointed out, but also in the enlarged ear-aperture, of oval form and vertical position (see Fig. 7), and the dense hair-like antrorse bristles which cover and nearly conceal the cere.

We have elsewhere demonstrated that this genus belongs to the subfamily *Falconinæ*,¹ by reason of osteological affinities, notwithstanding its exceedingly different appearance externally.

From the examination of nearly one hundred and fifty specimens of the genus, we have been able to make the following deductions regarding the nature of the changes to which the plumage of these hawks is subject: (1) There is no appreciable sexual difference, either in the young or adult stages; (2) there are two well-marked growth stages, causing the young birds to differ very essentially in plumage from the adult; and (3) certain species are more or less subject to erythrism, individuals being deeply rufescent and others clear plumbeous, *these phases being entirely independent of age, sex, or season*, and connected by specimens variously intermediate between the two extremes. This dimorphism of plumage is in every respect analogous to that so well known to characterize certain owls, as the *Syrnium aluco* of Europe, the common *Scops asio* of the United States, and several species of *Glaucidium*, in Tropical America. In the case of the *Glaucidium ferrugineum*, the rufous phase is far commoner in the Amazonian region than in Middle America, it being the rule throughout the former district and the exception in the latter; in the same way, *Micrastur ruficollis*, of Brazil, etc., is rufous in perhaps seventy-five per cent. of the individuals composing that species, and the development of the erythrism is extreme; but in *M. guerilla*, the northern form, it occurs in perhaps less than fifty per cent., and then consists of only an appreciable tendency toward this condition, seen in a rusty wash overlying the plumbeous of the back, producing thereby a warm-sepia tint.

All the known species agree in the following—

Common Characters.—Tail dusky tipped and irregularly barred with white. (A²) Adult: Above plain blackish or plumbeous,

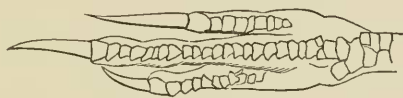
¹ Outlines of the Natural Arrangement of the Falconidæ. [Read before the Philosophical Society of Washington, April, 1873.] <Bull. U. S. Geological and Geographical Survey of the Territories, No. 4, second series. Washington: Government Printing Office, June 10, 1875.

² These letters and figures in parentheses refer to those of the following table.

beneath immaculate white or ochraceous. Young: (1) Beneath spotted or barred with dusky, or (2) with the feathers bordered with grayish. (B) Adult: Above varying from plumbeous to rufous; beneath marked with regular, ray-like bars of dusky and white except on the throat and sometimes (in *M. concentricus*) the crissum and anal region. Young: Throat and half-crescent behind the ear coverts, white; lower parts white, with or without coarse bars of dusky.

They may be distinguished by the following differential characters:—

Fig. 8.

*M. pelzelni*. Nat. size.

A.—Outer toe decidedly longer than the inner. (Fig. 8.)

a. Size large (wing more than 8.00).

1. Tail longer than the wing (wing 9.70–11.70, tail 9.60–13.00). Above black with a nuchal collar of white or ochraceous. Entire Inter-tropical Region, except Andean district. *M. melanoleucus*.

2. Tail shorter than the wing (wing 8.80–9.30, tail 7.80–9.00). Above plumbeous, without a nuchal collar. Costa Rica to Brazil.

M. mirandolii.

b. Size small (wing less than 8.00).

3. Wing, 6.50–7.10; tail, 6.90–7.50; tarsus, 2.20–2.50; middle toe, 1.10–1.25. Tail crossed by 3–6 white bars.¹ Adult: Tail crossed by 3–4 bars of white. Above uniform plumbeous or chocolate, the head and neck plumbeous. Throat light-gray; jugulum, breast, and entire lower parts barred with white and dusky. Young: Above dark clove-brown, sometimes indistinctly barred or spotted with rusty. Beneath white or buff, with coarse bars of dusky (rarely immaculate). Middle America, south to Ecuador. *M. guerilla*.

4. Wing, 6.90–7.50; tail, 7.60–8.40; tarsus, 2.20–2.45; middle toe, 1.15–1.25. Adult (*rufous phase*): Above rusty-chocolate, becoming grayish-brown on the crown; throat light chocolate; jugulum, and entire other lower parts transversely barred with dusky and white. Tail crossed by 4–5 bars of white. Young: Above dark sooty brown, indistinctly barred with light rusty; crown and nape sooty black. Tail crossed with 6–7 bars of white. Lower parts buffy white, or buff, without rufous tinge on breast. Venezuela and Columbia.

Z. zonothorax.

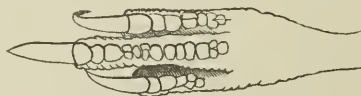
¹ The terminal bar is not counted in these diagnoses.

5. Wing, 6.60-7.10; tail, 7.30-7.80; tarsus, 2.30-2.45; middle toe, 1.15-1.30. Adult (*plumbeous phase*): Above light plumbeous, the wings browner. Tail crossed by four bars of white; throat light gray; jugulum more or less washed with light rufous; entire lower parts barred with white and plumbeous. *Rufous phase*: Above rusty brown, becoming more plumbeous on the crown; neck and entire jugulum light rufous. Tail crossed by 4-5 bars of white. Young (*plumbeous phase*): Above grayish-brown or umber; tail crossed by 6-8 bars of white spots; throat white, with a half-crescent branch behind the ear-coverts; breast scarcely tinged with rufous. *Rufous phase*: Above dark rufous or rusty chocolate, the crown darker and more slaty. Tail crossed by 6-7 interrupted bars of white; throat and half crescent behind ear-coverts, white; breast more or less strongly washed with rufous. Eastern South America, south to a little beyond latitude 10° South (Sharpe); Venezuela and Guiana (SHARPE). *M. ruficollis*.

6. Wing, 6.50; tail, 6.30; culmen, .60; tarsus, 2.30; middle toe, 1.20. Adult (*plumbeous phase*): Tail crossed by two bars of whitish or pale brownish-gray. Above uniform dark plumbeous, the tail darker and the wings browner. Throat light-gray; rest of lower parts white, marked *everywhere* with very narrow bars of dark plumbeous, these bars very narrow and distinct on the flanks and crissum. Peruvian Amazons. *M. pelzelni*.

B.—Outer toe not longer than the inner. (Fig. 9.)

Fig. 9.



M. concentricus. Nat. size.

f. Tail shorter than the wing. Wing, 7.10-7.75; tail, 6.30-7.00; culmen, .60; tarsus, 2.25-2.45; middle toe, 1.00-1.08. Adult: Tail crossed by 1-4 narrow bars, or lines, of white. Above dull plumbeous, the tail darker and the wings browner. Throat grayish-white; other lower parts white, the *crissum*, *anal region*, and lining of the wing, and *sometimes the flanks and tibiae, immaculate*; the other portions barred with plumbeous. Tropical South America. *M. concentricus*.

1. MICRASTUR MELANOLEUCUS.

Sparvius melanoleucus, Vieill., Nouv. Dict. Hist. Nat., x, 1817, 327; Enc. Méth., 1267. [Adult.]

Micrastur semitorquatus, Sch. and Salv., Ibis, 1839, 218; Pr. Zool. Soc. Lond., 1869, 365; Nom. Av. Neotr., 1873, 120.—Strickl., Orn. Syn., I, 1855, 122.—Lawr., Ann. N. Y. Lyc., VII, 1862, 8; IX, 1868, 134; Mem. Boston Soc., N. II., II, 1874, 299.—Salvin, P. Z. S., 1870.—

Ridgw., Pr. Boston Soc., May, 1873, 76.—Sharpe, Cat. Ac. B. M., 1874, 75.

Climacocercus semitorquatus, Caban. J. f. Orn., 1865, 407.

Fulco brachypterus, Temm., Pl. Col., I, 1824, pls. 116 (juv.), et 141 (adult).

Astur brachypterus, Spix, Av. Bras., I, 1824, 9.—Vig. Zool. Journ., I, 338.—Steph. Zool., XIII, pt. 2, 28.

Nisus brachypterus, Less., Man. Orn., I, 1828, 98 ; Tr. Orn., 62.—Cav., Règ. An., ed. 2, I, 334.—Schleg., Mus. Pays-Bas, Astures, 1862, 52.

Accipiter brachypterus, Gray, List B. Brit. Mus., 69.

Micrastur brachypterus, Gray, Gen. B., ed. 2, 1841, 6 ; fol. 1849, 28, sp. 1, pl. 10, f. 1 ; Hand List, I, 31, No. 290.—Bonap. Consp., I, 1850, 30.—Pelz. Reis., Nov. Vög., 1865, 12 ; Orn. Bras., 1871, 7, 398.

Herpethores brachypterus, Kaup, Contr. Orn., 1850, 71.

Rhynchomegas brachypterus, Bonap., Rev. et Mag. Zool., 1854, 537.

“*Fulco leucomelas*, Illig.,” Licht., Verz. Doubl., 1823, 62.

Carnifex naso, Less., L'Echo du Monde savant, année 9, 1081 ; Rev. Zool., 1842, 379.

Fulco percontator, Cabot, Journ. Bost. Soc., N. H., IV, 1844, 462.

Nigriflanco, Azara, Apunt, I, 1802, 124.

Hab. The entire Intertropical Region (except Andean district), north to Mazatlan (Pacific coast) and Vera Cruz (Atlantic coast), and south to Paraguay. *Not yet recorded from the Andean district south of New Granada, nor from western Amazonia.*

Sp. Char. Wing, 9.70–11.70 ; tail, 9.60–13.00 ; culmen, .80–1.00 ; tarsus, 3.10–3.65 ; middle toe, 1.60–2.05. Third to sixth quill longest ; first much the shortest. Above plumbeous-black or blackish-brown, interrupted by a more or less conspicuous nuchal collar of white or ochraceous. Tail crossed by 4–7 narrow light bands, usually interrupted. The last one terminal and the first concealed. Adult : Lower parts entirely immaculate, the color varying from pure white to deep ochraceous-buff ; upper parts unvariegated ; nuchal collar distinct. Young : Lower parts more or less spotted or barred with blackish ; upper parts usually more or less variegated with indistinct bars or transverse spots of ochraceous or dull rusty ; nuchal collar more interrupted. “ Iris brown.”

Remarks.—It is a noteworthy fact that all the specimens from Costa Rica in the series we have examined are deep ochraceous beneath, while those from Mazatlan and Colima are pure white. Whether this difference results from climatic causes, or merely different stages of growth of the feathers, it is difficult to decide ;

but the latter conjecture is rather favored by the circumstance that of four specimens from Tehautepec (an intermediate locality by the way), three obtained in August, and just freshly moulted, are ochraceous beneath, while one shot in February, with older plumage, is white.

Notwithstanding that this species has been so generally identified with the *Sparvius semitorquatus* of Vieillot (Nouv. Dict. Hist. Nat., x. 1817, 327, et Enc. Méth., 1263), we cannot concur in this opinion, the very first clause in the diagnosis of that bird precluding the possibility of it being this species. The diagnosis is as follows:—

“*L’Epevier a demi-collier roux.* 6. S. Semi-torquatus. S. vertice albo, nigricante transversim striato; semi-torque rufescente, fusco terminato; corpore suprâ nigricante, rufescente striate; ventre albo; rostro fusco; pedibus flavescentibus.”

It being well known that the present species always, in every stage of plumage, has the crown uniform black, we do not see how the description of a bird with the “crown white, transversely barred with black,” can possibly be made to apply to it.

List of Specimens in U. S. National Museum.

Catalogue number.	Original number.	Sex and age.	Locality.	When collected.	From whom received.	Nature of specimen.
16577	.....	♂ ad.	Panama R. R. ....	.....	J. McLeannan...	S. (Skin.)
29301	129	♂ ad.	Colima, Mex.	February ..	J. Xantus.....	S.
30237	526	♂ ad.	Sierra Madre, Mex.	April, 1863.	“ “	S.
30238	527	♂ ad.	“ “	“ “	“ “	S.
33207	.....	♂ ad.	Costa Rica (San José).....	.....	J. Carmiol.....	S.
33552	145	♂ ad.	Mirador, Mex.	October ...	C. Sartorius	S.
37337	352	♂ ad.	Mazatlan, Mex. ....	.....	A. J. Grayson	S.
47365	.....	♂ ad.	Costa Rica (Augustura).....	.....	J. Carmiol.....	S.
51300	293	♂ ad.	“ “ (Rancho Rodondo).....	Nov. 16, 1867	A. von Frantzius.	S.
51301	292	—juv.	“ “ .....	.....	“ “ .....	M. (Mounted.)
51344	.....	♂ ad.	Mazatlan, Mex.	March, 1868	A. J. Grayson	S.
52815	353	♂ ad.	“ “ .....	.....	“ “ .....	S.
52824	354	♂ ad.	“ “ .....	.....	“ “ .....	S.
59511	1001	♂ ad.	Tehuantepec, Mex.	November ..	F. Sumichrast....	S.
59512	1002	♂ ad.	“ “	“ “	“ “	S.
64930	603	♂ ad.	Costa Rica.....	.....	W. M. Gabb.....	S.
64931	287	♂ ad.	“ “ .....	.....	“ “ .....	S.
66330	19	♂ juv.	“ “ Lipurio .....	.....	“ “ .....	S.
66331	21	♂ ad.	“ “ .....	.....	“ “ .....	S.
67279	6a	♂ ad.	Tehuantepec, Mex.	Feb. 19, 1872	F. Sumichrast ..	S.
67558	251	♂ ad.	Costa Rica (Talamanca).....	..... 1874	W. M. Gabb.....	S.

Other specimens examined.—Mus. Acad. N. S. Philad., 7; Boston Soc., 2; G. N. Lawrence, 3; Sumichrast collection, 5. Total, 35.

2. MICRASTUR MIRANDOLLI.

Astur Mirandollei, Schleg., Mus. Pays-Bas, Astures, 1862, 27; Ned. Tijdschr. I, 1863, 130.

Micrastur Mirandollei, Sci. and Salv., Proc. Zool. Soc. Lond. 1867, 759; Ib. 1869, 395; Nom. Av. Neotr. 1873, 120.—Gray, Hand List, I, 31, No. 391.—Pelz., Orn. Bras. IV, 398.—Ridgw., Pr. Boston Soc. N. H., May, 1873, 77.—Sharpe, Cat. Acc. B. M. 1874, 76.

“*Micrastur macrorhynchus* Natt.” Pelz., Orn. Novara, 1865, 11; Orn. Bras., 1871, 7.

Hab. Intertropical Region, north to Costa Rica (Nat. Museum), south to Amazonia.

Sp. Char. Wing, 8.80–9.30; tail, 7.80–9.00; culmen, .80–.85; tarsus, 2.80–3.15; middle toe, 1.30–1.50. Fifth quill longest; first shortest.

Adult: Above continuous, uniform plumbeous; tail blackish, narrowly tipped with white, and crossed by three narrow bands of white, each inclosing a dusky mottling—or of uniform pale grayish-brown. Lower parts, including the lining of the wing and sometimes the maxillæ, continuous white, usually with the shafts of some of the feathers black; the breast sometimes with transverse crescentic spots of pale grayish.

Young (67,862, Nat. Mus., Costa Rica; Prof. Wm. M. Gabb): Similar to the adult, but above dark-slate, with a slight sepia cast, below creamy-white, all the feathers bordered with dull brownish-gray and with shaft-streaks of darker, these markings heavy on the jugulum and breast, narrower and fainter posteriorly. Tail as in the adult. Bill bright-yellow, the base of the culmen horn-color; cere and orbits duller yellow; tarsi and toes bright yellow; claws deep black, “iris olive.” Wing, 8.80; tail, 8.70; culmen, .80; tarsus, 3.10; middle toe, 1.50. Fifth quill longest; first much shortest; outer six appreciably sinuated. Graduation of the tail, 1.40.

List of Specimens in U. S. National Museum.

Catalogue number.	Original No.	Sex and age.	Locality	From whom received.	Nature of specimen.
67862	352	♂ juv.	Talamanca, C. R.	Prof. W. M. Gabb	S.

Other specimens examined.—Mus. Acad. N. S. Philad., 2; Boston Soc., 1; G. N. Lawrence, 2; Total, 6.

3. MICRASTUR GUERRILLA.

Micrastur guerilla, Cassin, Pr. Acad. Nat. Sci. Phila. 1848, 87 (Young); Journ. Phil. Ac. I, 1850, pl. xl.—Gray, Gen. B. I, 1849, 28; Hand List, I, 1869, 31.—Bonap. Consp. I, 1850, 30.—Strickl. Orn. Syn. I, 1855, 123.—Scl. and Salv. P. Z. S. 1869, 368; 1870, 214-838; Nom. Av. Neotr. 1873, 120.—Salvin, P. Z. S. 1870, 214-16.—Sharpe, Cat. Diurn. Acc. Br. Mus. 1874, 79.

“*Micrastur concentricus*,” Scl. P. Z. S. 1856, 285.

“*Micrastur gilvicollis*,” Scl. P. Z. S. 1858, 96.—Scl. and Salv. Ibis 1859, 218. Lawr., Ann. N. Y. Lyc. VII, 1861, 317.

“*Micrastur xanthothorax*,” Scl. P. Z. S. 1859, 368.

“*Micrastur ruficollis*,” Ridgw. Pr. Boston Soc. N. H., May, 1873, 78. (In part.)

Hab. Middle America, from Vera Cruz, Eastern Mexico, to Ecuador (Guayaquil).

Sp. Char. Wing, 6.50-7.10; tail, 6.90-7.50; culmen, .55-.70; tarsus, 2.20-2.50; middle toe, 1.10-1.25.

Adult. Plumbeous phase: Above uniform plumbeous, the wings slightly browner, and the tail blackish. Tail narrowly tipped with white and crossed by 3-4 narrow oblique bars of white or dull brownish-gray (broader, and always white, on the inner webs). Cheeks and throat ash-gray, the latter becoming lighter centrally. Other lower parts white, barred *everywhere*, in very regular transverse rays, with dark-plumbeous. *Brown phase:* Similar, but entire back and wings chocolate, umber, or sepia-brown, contrasting strongly with the plumbeous of the head and neck; jugulum more or less tinged with brown.

Young. Spotted phase: Above dark clove-brown, the crown and nape brownish-black; nape crossed by a collar of white spots, sometimes continuous and conspicuous, often nearly concealed; scapulars and entire wings indistinctly barred, or transversely spotted, with paler, more rusty-brown, these bars being most conspicuous on the tertials. Tail dusky-black, tipped with white, and crossed by 4-5 narrow bars of the same. Throat white, this extending upward behind the dark-brown auriculars in the form of a half crescent; remaining lower parts buffy-white or deep-buff barred (less regularly and finely than in the adult) on the breast and sides with dusky-brown—rarely barred over the whole surface. *Plain phase:* Similar, but the pale-rusty bars on wings and scapulars obsolete, and the colors generally clearer; usually less heavily barred beneath—sometimes immaculate.

Remarks.—In all stages of plumage there is a very considerable range of individual variation, as to both size and markings, though the relative proportion of the parts is very uniform. In two adults, one from Coban, Guatemala, the other from Calovevora, Veragua, the throat is clear bluish-gray, the jugulum similar, rayed with very narrow lines of white. In another specimen from Veragua (a male from Calobre) the colors are darker throughout, the bars on the breast being nearly black; there is a decided brown wash on the jugulum, and the throat is nearly white centrally. A specimen from Vera Paz, Guatemala, and one from San Pedro, Honduras, have the throat pale-gray, slightly tinged with brown posteriorly; the bars on the jugulum white and dull-slate in equal width; while they are alike in all other respects also. The specimen from Nanegal, Ecuador, is very similar to these.

The young birds (= *M. guerilla*, Cass., l. c.) vary individually, so that only the extremes of their plumage need be described. The darkest example is one from the Volcan de Chiriqui (No. 4454, E. Arce). In this specimen the lower parts are deep-buff, marked *everywhere* with regular, sharply-defined broad bars of dark-brown, these bars as distinct and regular as in the adult, but broader, and separated by wider intervals, the ground-color being light buff. The upper parts of this specimen, however, are about of average character. A Vera Paz specimen is very similar, the only difference being that the bars are just appreciably narrower, and the ground perceptibly paler buff. The darkest upper plumage is seen in another Veragua specimen, in which the whole upper surface is a very dark sooty-brown, or blackish-umber, the crown and nape brownish-black; the wings and scapulars show numerous indistinct bars and transverse spots of pale brown. The lower parts are deep buff, tending to ochraceous, but the bars are very distant and confined to the breast and sides. The palest example is one from Guatemala (Choctun, Vera Paz, Jan. 1860), in which the lower parts are buffy-white, entirely *immaculate*; the upper parts are dark grayish-brown, or brownish-dusky, the top of the head darker, the wings and scapulars with the lighter bars and spots nearly obsolete. The latter specimen would probably have assumed the plumbeous phase of the adult dress, and the two others the brown-backed phase. On the right side of this specimen is a perfect feather of the new moult, corre-

sponding with the adult, and the lower feather of the tibial plumes is similar. Another Choctun specimen is almost free from markings below, while the upper parts are absolutely destitute of the lighter spots or bars on the wings or scapulars.

List of Specimens in U. S. National Museum.

Catalogue number.	Original No.	Sex and age.	Locality.	From whom received.	Nature of specimen.
30413	166	.....	Costa Rica	Dr. A. von Frantzius	S.
32980	....	♀	Mexico	Verreaux	S.
50599	....	.....	Guatemala	Dr. Van Patten	S.
54938	....	.....	Guayaquil	Dr. Destrüge	M.
58938	....	.....	"	" "	S.
64927	604	ad.	Costa Rica	Professor Gabb	S.
64928	381	♀ ad.	" "	" "	S.
64929	522	" "	" "	" "	S.

The following measurements are of specimens in the collection of Mr. Osbert Salvin:—

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
ADULTS.					
Vera Paz	6.90	7.50	.70	2.40	1.25
Coban	6.60	7.30	.55	2.30	1.10
Calovevora, Veragua ♂	6.85	7.30	.60	2.40	1.10
Colobre ♂	6.50	....	.60	2.40	1.15
San Pedro, Honduras	7.10	7.50	.65	2.40	1.20
Nenegal, Ecuador . . . . .	....	....	.60	2.35	1.25
YOUNG.					
Vera Paz 2262	6.65	6.90	.55	2.20	1.10
" " 2259	6.90	7.15	.65	2.50	1.20
" " 4521	7.00	7.10	.62	2.40	1.25
" " 2261	6.50	7.00	....	2.35	1.15
" " 4522	6.85	7.40	.60	2.50	1.15
Veragua	6.50	6.90	.60	2.40	1.10
Volcan de Chiriqui 4454	6.70	6.90	.60	2.30	....
Jalapa, Mex.	6.75	7.40	.60	2.30	1.15

4. MICRASTUR ZONOTHORAX.

Climacocercus zonothorax, Cabanis, Journ. für Orn. 1865, 406.

Micrastur zonothorax, SCL. and SALV., P. Z. S. 1869, 366; Nom. Av. Neotr. 1873, 120.—GRAY, Hand-List B., I, 1869, 31.—SHARPE, Cat. Diurn. Acc. Br. Mus. 1874, 79.

Hab. New Granada and Venezuela.

Sp. Char. Wing 6.90–7.50; tail 7.60–8.40; tarsus 2.20–2.45; middle toe 1.15–1.25.

Adult (*brown phase*): Above rusty-chocolate, becoming gradually less reddish on the head, the crown being dull grayish-brown. Tail black, narrowly tipped with white, and crossed by 3–4 narrow bars of white. Whole throat light chocolate, like the cheeks; remaining lower parts, *including the jugulum*, and lining of the wing finely barred with clear dark slate and white, the white bars broader posteriorly but much narrower than the slaty ones on the jugulum.

Young: Above dark sooty-brown, much tinged with rusty, and indistinctly barred or spotted transversely with lighter rusty over the whole surface. Crown and nape sooty-black, separated from the dusky-brown of the back by a more or less distinct nuchal collar of white or buff. Tail black, narrowly tipped with white, and crossed with 5–6 narrow bands of white. Lower parts buffy-white or deep buff, sometimes immaculate, but generally more or less barred with brownish-dusky; the throat white, sending up a branch behind the brown ear-coverts, in form of half a crescent.

Remarks.—This form appears to be distinct from both *M. guerilla* and *M. ruficollis*, between which it is somewhat intermediate, though larger than either; but the differences are much harder to define than they are to perceive. The series before us is very small, while only one specimen is an adult; to make the material still more unsatisfactory, two of the three young birds are not full-grown, so that measurements would be useless.

The *M. zonothorax* is considerably larger than either of its allies, the tail especially being longer; the old bird resembles most that of *M. ruficollis*, but the jugulum is barred slate and white, like the breast, instead of being covered by a rufous patch; the head, too, is browner. The young bird is in colors more like that of *M. guerilla*, lacking entirely any rufous wash on the breast, and having the upper parts distinctly spotted with light

rusty on a blackish ground; but the bars on the tail number from 5 to 6, instead of 2 to 4.

The following measurements are from specimens in the collection of Mr. Osbert Salvin:—

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
ADULT.					
Venezuela	6.90	7.60	.62	2.30	1.20
YOUNG.					
Porto Cabello ♀	7.50	8.40	.70	2.45	1.25
Venezuela	7.20	.....	.....	.....	.....
Bogota ♂	7.20	8.25	.....	2.20	1.15

5. MICRASTUR RUFICOLLIS.

[*Rufous phase.*]

- Sparvius ruficollis*, Vieill., Nouv. Dict. X, 1817, 322 (*adult!*); Enc. Méth. III, 1263.—Pucheran, Rev. Zool. 1850, 91.
- Micrastur ruficollis*, Strickl., Orn. Syn. I, 1855, 122.—Sci. and Salv., P. Z. S. 1869, 366; Nom. Neotrop. 1863, 120.—Gray, Hand List, I, 1869, 366.—Ridgw., Pr. Boston Soc. N. H. XVI, May, 1873, 78 (part).—Sharpe, Cat. Acc. Br. Mus. 1874, 76 (part).
- Fulco xanthothorax*, Temm., Pl. Col. I, 92, 1824 (*adult*).—Spix, Av. Bras. I, 1824, 19.
- Nisus xanthothorax*, Less., Man. Orn. I, 96; Tr. Orn. 58.—Cuv., Règ. An. ed. 2, 334.
- Accipiter xanthothorax*, Gray, List B, Brit. Mus. 69.—Cassin, Proc. Ac. Nat. Sc. Phila. 1848, 88.
- Climacocercus xanthothorax*, Burm., Syst. Ueb. II, 1856, p. 122.
- Micrastur xanthothorax*, Gray, Gen. B. fol. sp. 2.—Bonap., Consp. I, 1850, 30.—Pelz., Orn. Nov. 1865, 12; Orn. Bras. I, 1868, 399.
- Herpetotheres xanthothorax*, Kaup, in Contr. Orn. 1850, 71.
- ? *Fulco leucauchen*, Temm., Pl. Col. 1823, pl. 36 (*young?*)—Pucheran, Rev. Zool. 1852, 91.
- Astur leucauchen*, Less., Man. Orn. I, 92.—Cuv., Règ. An. ed. 2, 332.
- Nisus leucauchen*, Less., Tr. Orn. 60; Rev. Zool. 1850, 91 (fide Pelzeln).

[*Plumbeous phase.*]

? *Sparvius gilvicollis*, Vieill., Nouv. Dict. N. H. X, 1817, 323 (*adult*);
Enc. Méth. III, 1264.—Pucheran, Rev. Zool. 1850, 91.

Micrastur gilvicollis, Pelz., Orn. Bras. 399; Orn. Nov. 1865, 10.

Micrastur leucauchen, Bonap., Consp. I, 1850, 30.—Strickl., Orn. Syn. I,
1855, 123; ScL and Salvin, P. Z. S. 1869, 367 (*excl. syn.*), [*adult!*]—
Ridgway, Pr. Boston Soc. Nat. Hist. XVI, May, 1873, 80 [*young*].

Accipiter leucauchen, Gray, List B, Brit. Mus. 68.—Cassin, Pr. Ac.
Nat. Sci. Philada. 1848, 88.

? *Fulco trifasciatus*, Natterer, Cat. Msc. No. 954 (*vide* Pelzeln).

Fulco concentricus, Pucheran.

Micrastur ruficollis, Sharpe, Cat. Acc. Br. Mus. 1874, 76 (part).

Hab. Eastern South America.

Sp. Char. Wing, 6.60–7.10; tail, 7.30–7.80; tarsus, 2.30–2.45;
middle toe, 1.15–1.30.

Adult. Plumbeous phase: Above light plumbeous, or bluish ash-gray, the wings browner; tail slate-black, narrowly tipped with white, and crossed by three narrow bars of white. Throat and jugulum very light grayish, the former nearly white centrally, and the latter more or less washed with light rufous. Other lower parts white, everywhere finely barred with narrow and very regular rays of plumbeous. Bill black, the basal half of the lower mandible light yellowish. *Rufous phase:* Above rusty-brown, inclining to rufous; crown ash-gray or plumbeous, usually in abrupt contrast; neck and entire jugulum light rufous; other lower parts everywhere transversely barred with dusky plumbeous and white. Tail blackish-dusky, narrowly tipped with white, and crossed by 3–4 narrow bars of white, these sometimes obsolete on outer webs.

Young. Plumbeous phase (= *M. leucauchen*, Ridgway, *l. c.*): Above varying from grayish-brown to umber, interrupted by a more or less conspicuous nuchal collar of whitish spots; tail blackish-dusky, narrowly tipped with white, and crossed by 5–7 rows of interrupted transverse spots of the same. Throat white, sending up a conspicuous branch, in the form of a half crescent, behind the brownish ear-coverts. Beneath white, more or less tinged with buff; the breast sometimes washed with light rufous, the whole surface (except throat and anal region) narrowly barred with blackish, the bars growing fainter on the breast. *Rufous phase* (= *Falco leucauchen*, Temminck?): Above varying from dark rufous to dusky chocolate; crown darker and more slaty.

Tail dusky, narrowly tipped with white, and crossed by 5-6 narrow, interrupted bars of the same. Throat and half crescent behind the ear-coverts, whitish; breast more or less washed with rufous; other lower parts white or buff, transversely barred with dusky.

Remarks.—In this species there is a gradual transition in certain specimens between the two extremes described as the plumbeous and rufous “phases.”

a. *Plumbeous phase*: A specimen from Bahia has the entire dorsal surface clear, light bluish-plumbeous, the remiges inclining more to brownish-gray. The jugulum has only a faint wash of very light rufous. Another specimen from the same locality has each feather of the dorsal region bordered terminally with dull rusty, while the entire wings are strongly washed with this color; the jugulum is more extensively washed with a deeper shade of rufous. The young birds examined agree quite closely with the terms of the above diagnosis, the series exhibiting little individual variation, shown chiefly in the amount of rufous tinge on the breast, which is sometimes extensive, and again entirely absent.

b. *Rufous phase*: Two specimens from Brazil (Rio Janeiro and Bahia) have the entire dorsal region uniform dull rufous, abruptly contrasted against the dull plumbeous of the nape and crown. Another has the plumbeous of the crown and nape extended back on the interscapulars (even tinging some of the scapulars) which are merely bordered with rusty; the effect being a gradual blending or admixture on the back, of the plumbeous and rufous.

The bars beneath in these three specimens vary from plumbeous-gray to brownish-black, the white bars being on different specimen of different relative width to the dark bars. The specimen from Rio Janeiro has the tail-bars obsolete on the outer webs, which are uniform brownish-dusky.

In the young there is even greater variation than in the adults. Two Brazilian specimens vary as follows: One is uniform, very dark blackish sepia above, the back being as dark as, and very little different from, the crown; the jugulum is everywhere barred, both in the white on the upper portion, and in the rufous of the lower part, while the bars of the lower parts are very regular and narrow, upon a white ground, almost exactly as in the adult. The other specimen has the back dull rufous (as in the adult), and the crown dull brownish-slate, in strong contrast;

the sides of the breast are rufous, the jugulum is unbarred, and the bars of the lower parts are broad, distant, and brownish-black upon a buff ground.

There can be no question as to the proper specific name of this species, the *Sparvius ruficollis* of Vieillot, and the *Falco xanthothorax* of Temminck being unmistakably the adult in the rufous plumage. Whether the *Sparvius gilvicollis* of Vieillot is this bird in its gray plumage (= *M. leucauchen*, Sel. and Salvin, nec *Falco leucauchen*, Temm.), is a question which can only be decided by reference to Vieillot's type, should it yet exist. It probably is this bird, however, or the one which we name *M. pelzelni* (see p. 494), for it certainly is not the *M. concentricus* of Pelzeln, as we fully demonstrate under the head of that species.

The *Falco leucauchen* of Temminck cannot be identified with certainty from his figure or description. The latter comes near the young of the rufous phase of the present species, while the specimens of the latter have usually been labelled with that name. *As we recollect them*,¹ the specimens in the museum of the Philadelphia Academy, which were called *M. leucauchen*,² agree exactly with a specimen now before us, belonging to Mr. Salvin's collection, and which we regard as unquestionably the young of the plumbeous phase of *M. ruficollis*, called by Selater and Salvin *M. leucauchen*. But notwithstanding all these circumstances, which together favor the probability of the correctness of the identification, there are several points in Temminck's plate which cannot be reconciled to the young of the species under consideration, although it is fair to presume that these discrepancies may have resulted through a faulty representation of the type specimen. Upon examining this figure it will be noticed that the first character which attracts attention is the stripe of white spots over the eye, on each side of the crown, and down each side of the nape. These markings we cannot find in any specimens of *ruficollis*; while the latter have a distinct *nuchal* collar of white spots, not represented in the plate. The crown in this figure is colored rusty brown, like the back, whereas in *ruficollis* it is either plumbeous or, as is very rarely the case, blackish. The plate fails to show, too, the well-defined half-crescent behind the brownish ear-coverts,

¹ Unfortunately we have now no opportunity of comparing them.

² See Proceedings of the Boston Society of Natural History, XVI, May, 1873, pp. 35, 40.

which is so marked a feature in the young of *M. ruficollis*. While "les plumes blanches qui composent cette bande cervicale sont terminées de noir; le sommet de la tête et de l'occiput sont noirs; le dos, le croupion et les ailes d'un brun sombre, et les remiges rayées de noirâtre"—is a description which will scarcely apply to any specimens we have seen. The bird is unmistakably a *Micrastur*, but that it is undoubtedly this species we are by no means convinced.

The following specimens, in the collection of Mr. Osbert Salvin, have been examined and measured:—

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
ADULTS.					
<i>Plumbeous phase.</i>					
Bahia	6.50	7.30	.55	2.40	1.15
"	6.80	....	.60	2.40	1.15
<i>Rufous phase.</i>					
Bahia	6.80	7.30	.55	2.45	1.18
Bahia	7.10	7.80	.62	2.45	1.20
Rio Janeiro	6.60	7.30	.55	2.40	1.15
YOUNG.					
<i>Plumbeous phase.</i>					
Bahia	7.00	7.50	.60	2.35	1.20
<i>Rufous phase.</i>					
Brazil	6.60	7.00	.58	2.30	1.20
Rio Janeiro	7.00	7.80	.65	2.35	1.30

6. MICRASTUR PELZELNI, nov. sp.

Micrastur pelzelni, Ridgway, MSS.

Sp. Char. Wing longer than the tail; tail crossed by 3 light bars, including the terminal one. Adult ♂ (in collection Osbert Salvin, Jarayacu, Upper Ucayali, Peruvian Amazons, August 2, 1865; E. Bartlett): Above uniform continuous dark plumbeous. Tail darker, narrowly tipped with white, and crossed by two narrow bands of dull brownish-gray, becoming white on the inner webs. Side of head and neck plumbeous-gray; throat light gray. Rest of lower parts white, *everywhere* marked with very narrow

transverse bars of dark plumbeous or slate; these bars widest on the breast, but even here narrower than the white; on the flanks and crissum they are paler, very narrow, and distant. Wing, 6.50; tail, 6.30; culmen, .60; tarsus, 2.30; middle toe, 1.20.

Remarks.—This species most closely resembles *M. guerilla* in its plumbeous phase, to which it is so very similar that we had referred it to that species, not making much, at the first comparison, of the smaller number of tail-bands. But after measuring carefully all the specimens of *M. guerilla*, and finding that the minimum length of tail in that form is 6.90 inches, ranging thence to 7.50, and always greater than the length of the wing, we were quite surprised to find the tail of this specimen to be only 6.30 in length, or decidedly shorter than the wing, which, as were also the other parts, was about as in the average of *M. guerilla*. In abbreviated tail it is like *M. concentricus*, and it appears that Mr. Salvin had referred it to that species, since the label bore in his handwriting the name "*M. gilvicollis*," as did also a true *M. concentricus* in the collection; but it differs very essentially in the relative length of the lateral toes, the outer one being decidedly longer than the inner, instead of barely equal to it, or appreciably shorter; while the barred crissum and under wing-coverts distinguish it at a glance from that species.

This may possibly be the *M. gilvicollis* of Pelzeln¹ (*loc. cit.*), but the latter is very much more likely to be the plumbeous phase of *M. ruficollis*, called by Selater and Salvin *M. leucauchen*, and by

¹ "*M. pileo, capitis et colli lateribus, nucha, dorso, uropygio alisque supra cinereaceis, remigibus brunneis, parte basali pogoniorum internorum albo transversim striatis, alarum tectricibus inferioribus albis, brunneo transverse fasciolatis, gula albescente grisea, jugulo, pectore et abdomine albis, dense brunneo transverse fasciolatis (fasciis 6-8 in singula pluma), abdomine imo, corporis lateribus, tibiaram plumis et caudæ tectricibus inferioribus ejusdem coloris fasciis rarioribus, angustioribus, caudæ rectricibus nigrescente-brunneis apicibus albis, fasciis transversis albis angustis tribus æquidistantibus, rostro corneo basi flavo, pedibus flavis. Longit. 13½-14'', alæ 6, 9-10''', caudæ 6½-7'', rostri a rictu 9-11''', tarsus 2'', 3-4''.*

Avis juvenis differtis notæo obscure brunneo, uropygii plumis punctis albis notatis, genis brunneo et ochraceo variegatis, fascia transversa alba utrique infra genas versus nucham ducta cum nuchæ plumis albo-maculatis collare interruptum formantibus, gula alba, gastræo pallide ochraceo fasciis brunneis multo rarioribus et angustioribus, caudæ fasciis tribus interruptis et passim obsoletis.

Sharpe the "adult male" of *M. ruficollis*. We quote Pelzeln's remarks as given in the "Ornithology of the Novara," pages 10 and 11.

"*Micrastur gilvicollis* steht *M. concentricus* sehr nahe, aber seine Flügel sind kürzer, der Schwanz ist ziemlich bedeutend länger. Die Farbe des alten Vogels ist lichter, mehr aschgrau, die Binden der Unterseite sind schmaler und dichter gestellt und erstrecken sich auch über die Unterschwanzdecken; der Schwanz zeigt an den Individuen jedes Alters und Geschlechtes ausser dem Endsaume drei wiesse Binden, welche am jungen Vogel und an dem aus Cayenne schmal, unterbrochen und hie und da verloschen, an dem alten Männchen und dem Weibchen von Borba breiter und sehr hervortretend sind. Die dunkeln Querstreifen verschwinden an den beiden Vögeln in Übergangskleide am Unterbauch, den Seiten, den Unterschwanzdecken und Tibienfedern gänzlich oder sind nur schwach angedeutet. Bei allen Exemplaren, ausser dem von Cayenne, ziegen die Innenfahnen der Schwungfedern, ausser den weissen Querbinden gegen die Basis zu, bis nahe gegen die Spitze hin ähnliche oberhalb lichtbraune, unterhalb weisse, wovon bei *M. concentricus* nur an einem oder dem anderen Exemplare schwache Andeutungen zu sehen sind. Am alten Männchen von *M. gilvicollis* nähern sich die vorderen Schuppen der Tarsen sehr der Schilderform."

7. MICRASTUR CONCENTRICUS.

??? *Fulco concentricus*, ILLIGER, Mus. Berol.

??? *Nisus concentricus*, LESS., Tr. Orn.

Climacocercus concentricus, CABANIS, in Erich. Archiv, 1844, I, 265; in Tschudi Fauna Peruana, 18, 98 (white belly and lower tail-coverts!); in Schomb. Reise Br. Guiana, III, 735.

Micrastur concentricus, PELZ., Orn. Nov. 1865, 9; Orn. Braz., I, 1868, 399.—RIDGW., Pr. Boston Soc. N. H. XVI, Dec. 1873, p. 81.

Fulco senex, NATTERER, in Mus. Vindob. (fide Pelzeln).

Micrastur gilvicollis, SCL. & SALV. P. Z. S. 1869, 368 (not *Sparvius gilvicollis* VIEILL., 1817).—Nom. Av. Neotr. 1873, 120.—SHARPE, Cat. Acc. Br. Mus. 1874, 78.

Hab. Tropical South America, from New Granada and Trinidad to Peru (Bolivia?) and Brazil. Brazil (*Mus. Boston Soc.*), Amazonia (*Am. Mus., N. Y.*), ? Bolivia (*D'Orb.*), Bahia, Guiana, Rio Negro and Rio Janeiro (*Pelzeln*); Capiiru River, Pará, Bogota, and Trinidad (*Sharpe*), Cayenne (*Mus. O. Salvin*).

Sp. Char. Wing, 7.10-7.75; tail, 6.30-7.00; culmen, .60; tarsus, 2.25-2.45; middle toe, 1.00-1.08. Adult: Above uniform plumbeous; tail, blackish-dusky, narrowly tipped with white, and crossed 3-4 narrow bars, or lines, of the same. Beneath white, the throat sometimes faintly tinged with ashy, the breast and sides with narrow transverse bars of dusky, *anal region, crissum, and lining of the wing, always immaculate.*

Remarks.—This very distinct species may be immediately distinguished by the peculiar proportions of the lateral toes, and by having the tail shorter than the wing; while in its adult dress it is unique in the white throat and unbarred crissum and anal region, as well as by the yellowish instead of dusky color of the bill, though we are not sure of the constancy of the latter feature.

The shade of plumbeous of the upper parts generally inclines to brownish posteriorly, and becomes more bluish toward the head, especially on the neck; the feathers of the lower half of the rump are white, tipped with plumbeous.

A specimen from Cayenne, in Mr. Salvin's collection, has not only the parts described, but also the abdomen, flanks, and tibiae, unbarred; the crown is decidedly darker than the back, and the neck has a very perceptible bluish cast. Other peculiar features mark this as a young bird in transition plumage.

The proper name for this species is involved in considerable uncertainty from the difficulty of ascertaining just what bird two of the older authors—Vieillot and Lesson—had in view when they described their *Sparvius gilvicollis* and *Nisus concentricus*. Herr von Pelzeln (Orn. Nov. p. 10) identifies in the former the bird which we describe as the plumbeous phase of *M. ruficollis*, while the latter he considers to be the bird now under consideration. Messrs. Sclater and Salvin, however, differ from Herr Pelzeln (Proc. Zool. Soc., 1859, p. 368), and regard these two names as synonymous, basing their opinion on the fact that M. Pucheran had compared the types of each, then in the Paris Museum, and had pronounced them identical; and *gilvicollis* being the older of the two names, Messrs. Sclater and Salvin accordingly adopted that for the present bird. We are not so ready, however, to accept M. Pucheran's conclusions as a final settlement of the point, for the bird which Vieillot describes as *Sparvius gilvicollis* is certainly *not* this bird, and the error of this identification becomes at once apparent upon reading Vieillot's description, which is as follows,

the points of disagreement with the characters of the present bird being italicized :—

“ L'Épervier *a gorge cendrée*. 9. S. Gilvicollis. S. suprâ cærulescente-griseus ; *gula cinéré* ; corpore subtus fusco alboque transversim striato ; *rostr*o fusco ; pedibus flavis.

“ D'un gris-bleuâtre en dessus ; *gorge cendrée* ; dessous du corps rayé en travers de brun et de blanc ; *bec brun* ; pieds jaunes.

“ Cet oiseau, que nous avons vu au muséum d'histoire naturelle, en dont nous ne connoissons pas le pays natal, est d'un gris-bleuâtre sur toutes les parties superieures ; *cendrée sur la gorge* ; rayé en travers de brun et de blanc sur le devant du cou *et sur les parties posterieures* ; on remarque sur le dessous des plumes caudales, quatre lignes blanches, étroites et transversales ; le que est d'une longueur moyenne.”

It will be seen from the above that *Sparvius gilvicollis*, Vieillot, had a gray throat, a dusky bill, and posterior lower parts barred, so that it is impossible to indentify it with this bird, whose diagnostic features consist in a white throat, and immaculate white posterior lower parts.

Whether *Nisus concentricus* of Lesson is this species can only be determined by examination of the type specimen, if it exists. Should it have become lost or destroyed, the name ought to be altogether ignored, since the briefness of the description renders it wholly impossible to tell what species is meant ; while it is also probable that two are included. This description is as follows :—

“ ÉPERVIER A QUATRE LIGNES ; *Nisus concentricus* : *Falco concentricus*, Illig.

“ Le tour des yeux est nu ; l'occiput le dos, le manteau, les ailes, sont d'un bleu ardoisé ; la queue est très-courte, brunâtre et blanchâtre, les parties inférieures sont blanchâtres, cerclées de brun sur la poitrine et sur le ventre ; le bec et les tarses sont jaunes.

“ La femelle a la tête, le cou, d'un gris efumé, ainsi que le dos et les ailes ; les parties inférieures sont grises, rayées finement de brun. Cette espèce habite Cayenne, d'où l'a rapportée M. Poiteau. (Mus. de Paris.)” [LESSON, Traité Ois., I, 1831, 60.]

From this description alone, it is absolutely impossible to tell what species is meant, but the clause “ *le bec et les tarses sont jaunes*,” renders it somewhat probable that the bird is the same as that which Herr Pelzeln identified as *M. concentricus*.

There can be no doubt, however, that the present bird is the

Micrastur concentricus of Pelzeln; but whether that gentleman is right in his identification of Lesson's description, we are not able to decide; but, for the benefit of those who may have an opportunity to examine Lesson's type, we will say, that, should it have the outer toe not perceptibly longer than the inner,¹ the conclusion is correct, for the bird now under consideration differs essentially *from every other one of the genus in this remarkable respect*. Should there be no way of deciding this point by examination of Lesson's type, the species might be called *M. concentricus*, PELZELN, which name we feel justified, under the circumstances, in adopting. Pelzeln's description of this species is as follows:—

“*M. pileo, capitis et colli lateribus, nucha, dorso et uropygio schistaceis, alis supra concoloribus sed magis brunnescentibus, remigibus brunneis parte basali pogoniorum internorum albo transverse fasciolatis, gula grisco-alba, jugulo, pectore et abdomine albis brunnes transverse fasciolatis (faciis 5–7 in singula pluma), abdomine imo, corporis lateribus et tibiarum plumis ejusdem colons fasciis rarioribus angustioribus, belricibus caudal inferioribus albis laud fasciatus, caudæ rectricibus nigres centibus apicibus albis fasciis transversis angustis albis duabus, una versus basin altera medium collocata, vel (solummodo in individuis nonnullis adultis) fascia unica post medium sita, rostro corneo interdum basi, interdum apice flavo, pedibus flavis. Longit 13½ usque 14'', alæ 6¾–7'', caudæ 6¼, rostri a rictu 10–12''', tars. 2'' 3–4'''.*”

“*Avis junior differtis fascia transversa albo brevi utrinque infra genas versus nucham ducta, pectore et abdomine ochraceo-lavatis fasciis brunneis multo rarioribus et angustioribus, abdomine inferiore, corporis lateribus et tibiarum plumis fasciis nullis.*” [Orn. Nov. 1865, 9.]

There is but one feature in Pelzeln's description of his *M. concentricus* which does not accord with our *concentricus*, and that is the number of bands on the tail, which are stated to be from one to two, besides the terminal one, whereas in the specimens of our bird which we have seen, amounting in all to eight examples, the number varies from three to four! Should it be possible that there are two species with immaculate white lower tail-coverts, it

¹ The *claw* is not included; see figs. 8 and 9, pp. 481, 482.

should be borne in mind that our bird has the inner toe (exclusive of the claw) elongated to beyond the third joint of the middle toe, instead of falling considerably short of it, as in *M. guerilla*, *M. ruficollis*, and *M. zonocercus*, as well as the two larger species, while the outer toe extends no further, if as far, as the inner one. (See fig. 9, p. 482.)

It is quite likely, however, that a large number of tail-bands is characteristic of younger, and fewer bands distinctive of older birds, there probably being, as in *M. mirandollii*, but little difference between the plumage of the old and young. A circumstance in favor of this supposition is that a specimen in Mr. Salvin's collection having four bands on the tail, besides the terminal one, shows several strong signs of immaturity, the bill being yellow, the feathers of the under parts, particularly the flanks and crissum, having a fluffy downy texture, while those of the sides have a strong ochraceous tinge. In addition to these suggestive peculiarities, a single feather on the breast, of the new molt, has wider and more numerous bars than the others, they numbering 7 besides the basal gray, while on the others there are but 5.

Pelzeln describes the young (first plumage) as differing in having a short transverse bar of white behind the cheeks and extending towards the nape, the breast and abdomen washed with ochraceous and fasciated with distant and narrow bars of brown, the lower part of the abdomen, the tibiae, and the sides of the body without bars. The first feature is plainly visible in the bird before us, in a quite well-marked white crescent behind the ear-coverts, while it also has the sides, abdomen, and tibiae unbarred, besides having a distinct ochraceous wash under the wings.

Specimens Examined.—Mus. Philad. Acad. 5; Boston Soc. 1; N. Y. Mus. 1; O. Salvin, 1. Total 8.

APPENDIX.

Biographical notes on *M. melanoleucus*.

The late Colonel Andrew J. Grayson, well known as an indefatigable collector and observer of birds on the western coast of Mexico, thus describes the habits of this species:—¹

¹ On p. 299 of "Birds of Western and Northwestern Mexico. Based upon Collections made by Col. A. J. Grayson, Capt. J. Xantus, and Ferd. Bischoff. By George N. Lawrence." <Memoirs Boston Soc. Nat. Hist., Vol. II., pt. iii., No. ii., pp. 265-319.

“Among the great variety of hawks to be met with in a single day’s excursion in the locality of Mazatlan, none are so easily recognized as this peculiar and interesting species. I have only found it in the heavy forests, or the immediate vicinity of a thickly wooded country, where its slender form and lengthened tail attract our attention as it swiftly glides through the tangled woods, with that remarkable ease which we have often noticed in the sharp-shinned hawk (*A. fuscus*). It appears to be strictly arboreal in its habits, and possessed of wonderful activity, either in springing from branch to branch without opening its wings, or rapidly darting through the intricacies of the brush with apparently but little difficulty. I have seldom seen one of these hawks in an open country, and have never seen one flying higher than the tree tops, where they are met with. Its wings are rather short, and its flight is performed by rapidly repeated strokes, only for a short distance at a time. It preys upon various species of wood birds, which it captures by darting upon them on the ground or in the bushes; but the Chachalaca [*Ortalia wagleri*] is its favorite game; this is a gallinaceous bird, or wild chicken, about the size of, or lighter than the common hen, and is entirely arboreal, seldom running upon the ground, but is able by its peculiarly formed feet to cling to, or spring rapidly through, the thickest branches with great agility; but this hawk follows it with equal facility, until an opportunity offers to strike its prey, then both come to the ground together, the hawk being the lighter bird. I witnessed a scene of this kind that took place when I was endeavoring to get a shot at a Chachalaca, as it was jumping about the very thick branches of an acacia, overgrown with lianes; it appeared to be in great distress, uttering its harsh notes of alarm, and spreading its fan-shaped tail; suddenly I saw one of these hawks pounce upon it, when with harsh screams of terror and pain the Chachalaca dragged his captive to the ground, where they struggled for a few moments, but the unfortunate bird was soon overcome. The struggling and screams of the Chachalaca created a great commotion among the denizens of the woods; far and near were heard the harsh cries of other members of its family, and the Urraca Magpie [*Calocitta colliei*] with streaming tail and ludicrous gesticulations, as well as the Blue-back Jay [*Cyanocitta beecheyi*], and other birds in the neighborhood, gathered around to witness the scene of rapine; suddenly ap-

peared in the midst of this clamor a larger hawk (*Buteo harrisi*, Aud.), which rushed at once upon the captor of the Chachalaca; unable to withstand so heavy a charge, he was compelled to give up his honestly captured prey to a superior force, thus proving the old adage that 'might is right.' The slender but compact figure of our present subject was now seen perched upon a neighboring bough, scrutinizing with a vicious eye the more powerful but less active bird of prey, as he vainly attempted to bear off the lifeless form of the Chachalaca; but there was one yet mightier than he: I observed it for a few moments, then shot it, as also the long tailed Hawk, thus securing all three.

"They build their nest of dry twigs and moss, which is placed in a very tall tree; therefore, I regret that I am unable to describe the eggs."

Dr. Samuel Cabot in the Boston Journal of Natural History, Vol. IV. pp. 462-464, describes this bird under the name of *Falco percontator*, or Calling Falcon, from its loud calling note, said to be louder and more frequently uttered just before a storm.¹ It is also described as having the boldness and dash of a falcon or true hawk (*Nisus*), one of them having swooped at a boat-bill which he killed while flying across a stream, while another was observed to chase a dove while on the wing.

¹ Dr. Cabot says the Indians believe that this is "because its bones ache."